



Numerical Simulations of STOVL Hot Gas Ingestion in Ground Proximity Using a Multigrid Solution Procedure

Gang Wang
University of Illinois, Urbana, Illinois

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A multigrid solution procedure for the numerical simulation of turbulent flows in complex geometries has been developed. A Full Multigrid-Full Approximation Scheme (FMG-FAS) is incorporated into the continuity and momentum equations, while the scalars are decoupled from the multigrid V-cycle. A standard k- ϵ turbulence model with wall functions has been used to close the governing equations. The numerical solution is accomplished by solving for the Cartesian velocity components either with a traditional grid staggering arrangement or with a multiple velocity grid staggering arrangement. The two solution methodologies are evaluated for relative computational efficiency. The solution procedure with traditional staggering arrangement is subsequently applied to calculate the flow and temperature fields around a model Short Take-off and Vertical Landing (STOVL) aircraft hovering in ground proximity.			
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